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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/680,379	10/06/2003	Hagen Klauk	MUH-12807	5870

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LERNER GREENBERG STEMER LLP
P O BOX 2480
HOLLYWOOD, FL 33022-2480

EXAMINER

CHACKO DAVIS, DABORAH

ART UNIT	PAPER NUMBER
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1756

MAIL DATE	DELIVERY MODE
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07/26/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/680,379

Applicant(s)

KLAUK ET AL.

Examiner

Daborah Chacko-Davis

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _____ MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 May 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) 16-24 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>05/07</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-15, are rejected under 35 U.S.C. 103(a) as being unpatentable over U. S. Patent No. 5,942,374 (Smayling) in view of Japanese Patent No. 09-083040 (Aomori et al., hereinafter referred to as Aomori).

Smayling, in the abstract, in col 1, lines 58-67, in col 2, lines 1-16, in col 5, lines 21-67, discloses a method of doping an organic conductive layer wherein a substrate is coated with a polyimide, and doped with a dopant gas followed by exposure through a mask to radiation so as to form a doped region (fixing the doping substance in the polyimide layer via a covalent bond, i.e., conjugated sequences of single and double bond, the doped region becomes conducting). Smayling, in col 10, lines 12-17, discloses that the remaining portion (less doped, residual dopant) of the mask layer (polyimide or PR) is removed. Smayling, in col 6, lines 56-67, discloses a gate electrode provided with a layer that is less transmissive (a more absorbing layer, light opaque regions) above the gate electrode resulting is a less irradiated region (unexposed sections). Smayling, in col 5, lines 35-42, discloses that the organic layer is heavily irradiated so as to form a doped and undoped region in the polyimide layer such that the source and drain regions are in electrical contact with the doped portion of the

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doped polyimide region having increased electricity (see figure 1, current flows from reference 18 to reference 20 via channel reference 24). Smayling, in col 1, lines 57-67, in col 2, lines 1-17, in col 4, lines 1-54, discloses that the substrate is transparent to radiation (glass), forming source region, drain region spaced apart from the gate region, forming a gate dielectric (gate insulating region) positioned spaced apart from the source and drain regions (first and second region) and spaced apart from the gate electrode, wherein the source, the drain, the gate insulator, the gate electrode are spaced apart with the organic semiconducting layer. Smayling, in col 10, lines 1-29, discloses that after the removal of the undoped regions of the mask, the now exposed regions (masked previously) of the polyimide is restored i.e., the neutral polyimide in the unexposed regions that were previously n-doped and p-doped regions, after the removal of the mask layers, is restored to its original conductivity (claims 1-3, 6-9, 12). Smayling, in col 5, lines 43-49, in col 7, lines 1-8, discloses that the exposure is performed section by section (selectively scan one portion at a time) (claims 4, 10-11). Smayling, in col 6, lines 56-58, discloses that the exposure is performed through a mask (claim 5). Smayling, in col 1, lines 65-67, in col 2, lines 1-3, discloses that the source region, the drain region and the gate region are simultaneously formed on the substrate (claim 13). Smayling, in col 10, lines 60-67, discloses that the gate insulating material includes material transparent to radiation (transmissive regions, reference 20a of layer 16, see figure 15) (claims 14-15).

The difference between the claims and Smayling is that Smayling does not disclose that the doping substance in the organic compound is in regions adjoining the

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source contact and the drain contact. Smayling does not disclose that the organic semiconductor is applied directly with the contact region to the substrate.

Aomori, in the abstract and in figures 1a through 1d, discloses that the organic semiconductor layer (reference 7) is in direct contact with the contact region and the doping substance in the organic semiconducting layer is in the region that adjoins the source and drain contact.

Therefore, it would be obvious to a skilled artisan to modify Smayling by employing the method of contacting the contact region via the organic semiconducting layer and maintaining the doped substance in a region that adjoins the source and drain contact because Smayling, in col 8, lines 26-58, discloses that interconnect polymer layer (organic semiconducting layer) is formed on the contact regions (contacts) and the interconnect polymer layer has been irradiated i.e., it has a dopant concentration, and the interconnect layer is positioned in a region between the contacts (source and drain), and Aomori, in the abstract, discloses that employing a organic semiconducting layer in the claimed manner enables the formation of a high performance thin film transistor.

Response to Arguments

3. Applicant's arguments, see Amendment and Remarks, filed May 9, 2007, with respect to claims 1-15, have been fully considered and are persuasive. The 102 rejection of claims 1-15 have been withdrawn.

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A) Applicants argue that Smayling does not disclose doping in regions that adjoins the source and drain contact, and that the organic semiconducting layer (doped) is arranged between the contacts.

Aomori is depended upon to disclose this limitation. See paragraph no. 2. Additionally, Smayling does teach the formation of polymeric interconnect layer in a region that connects the source and drain contacts and that the interconnect layer is irradiated lightly i.e., doping substance is present in the interconnect layer and increases conductivity between the contacts.

Conclusion

4. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

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5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Daborah Chacko-Davis whose telephone number is (571) 272-1380. The examiner can normally be reached on M-F 9:30 - 6:00. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark F Huff can be reached on (571) 272-1385. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

dcd

July 23, 2007.



JOHN A. MCPHERSON
PRIMARY EXAMINER